V a. Types of structures

North Carolina waterfront property owners utilize various types of structures along the shorelines of their properties. DCM intends to map these structures and attribute them with their structure type as part of the ESMP.

There are two basic types of coastal structures, separated by use: 1) structures that are for recreation or commercial use along the shoreline and 2) structures that are designed for stabilizing the shoreline itself. Structures that are for recreation or commercial use include boat ramps, floating docks, piers and wharves. Stabilizing structures are either perpendicular or parallel to the shoreline. Structures parallel to the shoreline can in some circumstances serve as the shoreline (divide between land and water), and include vertical structures (i.e. bulkheads and seawalls), sloped structures (i.e. riprap revetments or marsh protection riprap revetments), sills, and breakwaters. Structures perpendicular to the shoreline include groins and jetties. Table 2 presents the structure types DCM intends to capture during the structure type inventory and their descriptions. Additional information and pictures of each structure type are included in attached appendices.

Table 2: Shoreline Structures

Type of Structure	Description
Boat Ramp	Concrete, brick, or asphalt sloping from high ground to below low water to allow vessels to be placed into the water.
Breakwater	Near shore or offshore, shore parallel, structures designed to reduce wave energy and trap sand. Can be constructed from stone, riprap, concrete, or steel. Sediment can build up in the lee of the structure to the point that it is all high ground (above normal high water/normal water level).
Bridge	Structure built to span bodies of water or other physical obstacles for the purpose of providing passage over the obstacle.
Floating Dock	Timber, plastic, concrete or steel platform to moor vessels against and will rise and fall with the tides.
Groin	Shore-perpendicular, typically straight, timber, rock, concrete, vinyl, or steel structure designed to trap sand on the updrift side. Can be constructed as either a single structure or in a series. A groin series will typically create a saw-toothed shaped shoreline.
Jetty	Shore-perpendicular timber, rock, concrete, vinyl, or steel structure designed to direct a current, stabilize an inlet (small or large), prevent sediment from accumulating in a channel, or for accommodating vessels through an inlet. Jetties are longer than groins and are always associated with an inlet, canal, or basin entrance.
Pier	Pile supported, shore perpendicular structure that provides access over a water body.
Sill	Shore-parallel, nearshore, submerged structure built to reduce wave action on the adjacent shoreline. Can be constructed from timber or stone with the purpose of protecting or re-establishing marsh vegetation. Well established sills will look identical to a sloped structure (riprap revetment for marsh protection).
Sloped Structure	Any shore-parallel, watertight or porous structure designed to stabilize the shoreline and absorb wave energy with a sloped face. Riprap revetments or marsh enhancement riprap revetments are constructed from stone either along an existing sediment bank or waterward of an eroding wetland substrate.
Unknown	Any structures unidentifiable from aerial photography
Vertical Structure	Any shore-parallel, watertight structure (bulkheads or seawalls) used to stabilize the shoreline in a vertical manner. Bulkheads are designed to retain or prevent the sliding of the land by driven timber, vinyl, or steel. Seawalls are concrete or stacked/grouted rock structures set on or in the ground to prevent flooding or overtopping of the land.
Wharf	Pile supported, shore parallel structures that provides access over a water body, and utilized to load or unload cargo from ships, or to provide platforms for commercial shipping infrastructure such as railroads, cranes, etc.